Comments on the Biomass Sections of the B&V RETI Phase 1A Report

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Overall concern

My main overall concern with the report is not with the report itself, but what will be done with it. The report presents a great breadth of information, but the actual data that will be used in the modeling phase of the work are very imprecise, to say the least. Nevertheless, as I understand it, the modeling is intending to define not only broad CREZs, but sub-CREZs, and possible sub-sub-CREZs, and then will rank these identified regions from one to X. In my opinion, the data just don't support such a fine level of analysis. The uncertainties will simply swamp the output, with the result that there will be no valid distinction between, say, the sub-CREZ ranked as no. 1, and the sub-CREZ ranked no. 20. However, the casual reader will see the ordinal ranking and take it at face value. This has the potential to produce conclusions that are neither defensible nor optimal for the state, and to kill projects that might be highly desirable.

In my opinion, the level of data certainly in the Phase 1A report is sufficient to support the identification and preliminary definition of the several major CREZs that we all suspect are out there. The data that will be available for the modeling phase of the work **might** be adequate to support a preliminary ranking of several broadly-defined zones, although I am skeptical about this (time will tell). I am quite sure that the data will not justify the kind of fine ranking that I heard described as being planned for the next phase of the B&V work during the last SSC meeting and follow-up phone call. I am not saying that the work described cannot be done from a purely modeling perspective. What I am saying is that the uncertainty bands on the data are too large to allow the output of modeling done at too fine a level of analysis to be meaningful or reliable.

Specific Comments on the Biomass Sections of the Report

Page 4-6, top of page

The seven-year MACRS for biomass is only available for the boiler portion of the plant, which is typically 60 percent of the total capital cost.

Pages 5-3 – 5-4, **Applications**

Biomass plants usually have a capacity of less than 50 MW because of the dispersed nature of the feedstock and the large quantities of fuel required. As a result of the smaller

scale of the plants and ~~lower heating values~~ **high moisture content** of the fuels, biomass plants are commonly less efficient than modern fossil fuel plants. In addition to being less efficient, biomass is ~~generally~~ more expensive than ~~conventional fossil fuels~~ **coal** on a $/MBtu basis because of added transportation costs. …

Page 5-4, **Resource Availability**

Add, to the list of agricultural residues: orchard prunings and removals. This should also be done in the relevant sections of chapter 6. Orchard residues provide more than 95 percent of the agricultural fuels used in California, so they are a very important component of the category: Agricultural Residues.

Page 5-5, **Table 5-1**

- Net plant heat rate: use a range of 14,000 – 17,500 btu/kWh, varies with fuel moisture, size, and other factors.
- Capacity factor: range of 80 – 90 percent (> 92 percent has been demonstrated).
- Total project cost: range of $3,000 – 4,500 /kW more than enough
- Fixed O&M: $83 /kWy too low! Should be more like $200 /kWy in today's world
- Installed US capacity: Correct value is probably in range of 4,000 – 5,000 MW. I have seen this 7,000 MW number many times before, it is broadly cited, but it includes the full MW value for lots of duel-fuel capacity in the pulp & paper industry that is really only 40 – 50 percent biomass.

Pages 5-5 – 5-6, **Environmental Impacts**

The section on environmental impacts identifies biomass as carbon neutral. However, it makes no mention at all about the significant biogenic greenhouse-gas reduction potential of biomass (I am attaching a report on the subject, and will have a new white paper out in one week). In the California context the reduction in biogenic-carbon greenhouse-gas emissions due to biomass energy production are approximately equal in magnitude to the avoided fossil-carbon emissions. The reductions in net biogenic emissions will probably show up in the future regulatory structure as ghg offsets, and the hope is that the value of these offsets will make biomass more competitive in the marketplace of the future. Biomass power production also decreases conventional emissions (particulates, CO, NOx, etc.) by avoiding open burning and landfilling. These very significant benefits, which are unique to biomass and biogas, should be mentioned in the report.

Pages 5-7 – 5-8, **Biomass Cofiring**

The bullet point at the top of page 5-8 is incorrect. Biomass cofiring does not pose a threat of SCR catalyst poisoning—coal is much more of a problem for the catalyst than wood.

Chapter 6, **Biomass Resource Potential**

On page 6-7 the text says that the total operational biomass generating capacity in California is about 700 MW. In fact, currently there are 600 MW_{net} of biomass capacity operating in California, supplying approximately 550 MW to the grid, and 50 MW of productive power that is used on the customer side of the meter, mostly for sawmill operations.

More generally, it is important to point out that the California Biomass Collaborative's estimate of California potential is not based on economics at all—it is strictly an estimate of technical potential, not commercial potential. It might be worthwhile to mention that the Governor's Executive Order S-06-06 sets a state policy goal of maintaining biomass and biogas as twenty percent of total renewables, which would require a greater than fifty-percent expansion in each if total renewables grow to the statewide target of twenty percent.